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RISK FACTOR OF STUNTING AMONG CHILDREN AGED 24-59 MONTH IN PUJON, EAST JAVA

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ABSTRACT

Stunting refers to a condition where children's height for age is more than two standard deviation below the WHO growth standard median. The prevalence of stunting in Pujon, east Java is 32,7 %. However, it still unknown the risk factor of stunting in Pujon. The objective of this study was to identify the risk factor of stunting in children aged 24-59 months. This was a cross-sectional study, involved 94 children, aged 24-59 months, in Pujon district. Data collected in December 2019 to February 2020. The result of this study found that 59,57% of 94 children were stunted. Independent T-test showed that maternal age (*P* 0.035), birth length (*P* 0.046), number of children in a household (*P* 0.045) were different between stunted group and normal group. Multivariate analysis showed that the number of household member (*P* 0.035) were strongly associated with stunting. In conclusion, the number of family member in a household is the most important risk factor of stunting. It is hoped that government and community health worker s can find the proper intervention to decrease the prevalence of stunting.

Keywords: stunting, risk factor, children, nutritional status, health status

INTRODUCTION

Stunting is the most important issue of children's nutritional status around the world. It is known that 21,9% of children under five years old are stunted (Unicef, 2019). Indonesia is in the third rank of stunting prevalence among countries in southeast asia (WHO, 2018). Primary health research data figured the prevalence of stunting in Indonesia is 30.8% (Riskesdas, 2018). Pujon is a district in east java province with the highest prevalence of stunting. The data showed that 1216 children (32.7%) is in "very short" and "short" categories (Dinkes Kab. Malang, 2019).

Stunting is a condition where children's height for age is more than two standard deviation below the WHO growth standard median (WHO, 2014). It can be classified to moderate stunting if Z-score Height/Age <-2SD and severely stunted if Height/Age <-3 SD (Kemenkes RI, 2020). Stunting is a chronic nutritional problem caused by in appropriate intake of nutrition in 1000 days of early life.

Many risk factors can cause stunting not only from health problem such as disease or recurrent infection but also non health problems such as economic, social, culture, poverty, lack of woman empowerment, and the environmental degradation problems as well (Beal, 2018). Stunting in childhood affect both the individual and the community. The affect is not only short-term impact, which results an increasing in the morbidity and mortality, but also the long-term impact, which causes low learning capacity during school and work productivity in adulthood. Impact of stunting can threat the quality of Indonesia's human resources, it is also threat to the competitiveness of the Indonesian human resource around the world (Trihono et al, 2015). In addition, according to The World Bank

(2016), the potential for a country loss caused by stunting in the economic sector is 2-3% per year of Gross Domestic Product (GDP).

The impact of stunting is more visible in people who live in rural areas or in the middle- and lower-income groups (Lusita et al, 2017). This is due to the low level of education and facilities and methods of providing information, which causes the community less of information and self-awareness and also reproductive health (Rosfianti, 2012). However, identifying the risk factor is the key to develop proper intervention. The purpose of this study was to determine the risk factor of stunting among children aged 24-59 month in Pujon, East Java.

MATERIAL AND METHODS

This is an analytic observational study with cross sectional design. Data collected in December 2019 to February 2020. Respondents were 94 children aged 24-59 month who visit health posts (Posyandu) in Madiredo and Wiyurejo subdistrict, Pujon distric, Malang region, East Java Province. Respondents were selected by using purposive sampling technique. The primary data were obtained from anthropometry measurement and interview using questionnaires. Children's heights were measured with head facing forward and standing in an upright position without footwear, using a *One Med*® microtoise with 1 mm accuracy (kemenkes, 2011). The questionnaire contains mother's identity, children's identity, number of children, number of family in household and family income. Meanwhile, the secondary data were obtained from mother and children health book (KIA), they are immunization status, breastfeeding history, pregnancy and birth history.

The dependent variable was stunting. Stunting was defined as WHO HAZ below -2 SD, according to sex of children (Kepmenkes, 2010). Independent variables were maternal characteristics (mother's age, mother's education, mother's employment status), child characteristics (sex of child, exclusive breastfeeding, birth weight, birth length, gestational age of birth, birth order, immunization status) and household characteristics (number of children, number of household members). Numeric data was analysed by independent T-test and categorical data analysed using chi-square test. Multivariate analyses used logistic regression. It is statistically significant if P<0.05 with 95% confidence interval (95%CI).

RESULTS

This study found that 59.57% of 94 children aged 24-59 month in Pujon were stunted (Table 1). Among characteristics observed, we found that mother's age (*P* 0.035), length of birth (*P* 0.046), number of children in a household (*P* 0.045) were different between stunted group and normal group (Table 2). Bivariate analyses using chi-square test showed that the number of family member in a household (*P* 0.002) and the number of children in the household (*P* 0.042) have association with stunting (Table 3). Multivariate analysis found that the number of family member (*P* 0.035) led the risk factor of stunting (Table 4).

Table 1.
Prevalence of Stunting

	n	%
Stunted	56	59.57
Normal	38	40.43
Total	94	100

Table 2.
Characteristic's Differences Between Stunted Group and Normal Group

	n	Mean	SD	p-value
Age of mother (year)				0.035
Stunted	56	27.36	6.349	
Normal	38	30.24	6.491	
Age of children (month)				0.472
Stunted	56	38.09	8.851	
Normal	38	36.71	9.398	
Weight of birth (gram)				0.218
Stunted	56	2911.61	503.893	
Normal	38	3046.05	533.522	
Length of birth (cm)				0.046
Stunted	56	48.11	1.796	
Normal	38	48.89	1.928	
Number of children in household				0.045
Stunted	56	1.66	0.769	
Normal	38	2.03	0.972	
Number of household members				
Stunted	56	4.45	1.361	0.404
Normal	38	4.66	0.909	

Table 3.
Risk Factors of Stunting

	Stunted n (%)	Normal n (%)	OR	95% CI	p-value
Maternal characteristics					
Mother's education status					
Primary school - middle school	41 (65.1)	22 (34.9)	1.988	0.829-4.766	0.121**
High school-academy	15 (48.4)	16 (51.6)			
Mother's employment status					
Housewife	46 (63)	27 (37)	1.874	0.704-4.990	0.205**
working	10 (47.6)	11 (52.4)			
Mother's age					
< 20 and > 35	11 (55)	9 (45)	0.788	0.291-2.135	0.638
20-35	45 (60.8)	29 (39.2)			
Child characteristics					

Sex of children					
Female	28 (58.3)	20 (41.7)	0.9	0.395-2.053	0.802
Male	28 (60.9)	18 (39.1)			
Exclusive breastfeeding					
Yes	29 (55.8)	23 (44.2)	0.7	0.304-1.615	0.403
No	27 (64.3)	15 (35.7)			
Weight of birth (gram)					
>2500	48 (57.8)	35 (42.2)	0.514	0.127-2.078	0.344
<2500	8 (72.7)	3 (27.3)			
Length at birth (cm)					
>48	35 (55.6)	28 (44.4)	0.595	0.241-1.467	0.258
<48	21 (67.7)	10 (32.3)			
Gestational age at birth (week)					
>37	51 (58)	37 (42)	0.276	0.031-2.459	0.220**
<37	5 (83.3)	1 (16.7)			
Immunization status					
Complete	55 (59.8)	37 (40.2)	1.486	0.09-24.517	1.000
incomplete	1 (50)	1 (50)			
Birth order					
First	28 (66.7)	14 (33.3)	1.714	0.739-3.979	0.208**
Second-etc	28 (53.8)	24 (46.2)			
Household characteristics					
Number of children					
1	28 (71.8)	11 (28.2)	2.455	1.023-5.889	0.042*
>2	28 (50.9)	27 (49.1)			
Number of household member					
3	15 (93.8)	1 (6.2)	13.537	1.704-107.539	0.002*
>3	41 (52.6)	37 (47.4)			

*statistically have significant association with stunting (P<0.005)

** Possible risk factors included in multivariate analysis model using logistic regression (P<0.25)

Table 4.
Multivariate Analyses

	aOR	95% CI	p-value
Number of family member	10.578	1.175-95.211	0.035*
Gestational age at birth	0.325	0.031-3.416	0.349
Number of children	2.072	0.314-13.685	0.449
Mother's education	2.219	0.834-5.907	0.110
Birth order	0.609	0.098-3.764	0.593
Mother's employment status	1.532	0.539-4.354	0.423

*statistically have significant association with stunting

DISCUSSION

The process of obtaining the data began with calculating the child's age adjusted to the time of data collection. Anthropometry measurement was done by followed the growth assessment standard. Subject of study were children who came to several health posts (Posyandu) in two subdistricts in Pujon distric. The result showed that 59.57% (56 children) were stunted. This shows that the percentage of stunting incidence in children aged 24 - 59 months in Pujon District higher than 20% as WHO highest level number. It means that nutritional status of children aged 24-59 month becomes an important issue. This also indicates that many children are not in optimal growth and development process.

Stunting is a health problem due to chronic malnutrition occurs during the 1000 days of early life (WHO, 2018). It also called a golden period where the brain growth rapidly. Stunting affects to child's development and lead the intelligence problems in the future. Apart from nutritional factors, it is also known that many other factors also influence the incidence of stunting in Indonesia, including factors from mothers, family parenting, environmental, socio-economic, and political factors (Kemenkes RI, 2018).

Based on subject characteristics, it could be confirmed that most of mother graduated from primary school and middle school. Respondents said that many of them decided to out of school and got married at a very young age (15-18 years old). The decision made for various complex reasons. Some of the reasons include factors of self-motivation, unclear of future, socio-economic factors, and having relationship. We also found that 42 children who came to the health post (Posyandu) were first children and most of them were female. The Data showed that there was no difference of children's sex between stunting group and normal group. It is not suitable with another study, Setyawati (2018), who found that the incidence of stunting at male children is bigger than female, it is related to development and motoric skills which grow faster in male children.

The prevalence of stunting in toddlers in the first 1000 days of life is 70% while the remaining 30% occurs at age 2 -5 years. This is related to the windows of opportunity for children to pursue growth. However, children still have the opportunity to catch up on growth that can occur at the age of more than 24 months. Stunted children lose their opportunity to grow physically by 3.2 cm per year for height for age z-score (HAZ) at 2 years of age

(Prendergast, 2014). According to study of Leroy et al. (2014) that height growth decreases between the ages of 24 and 60 months because 70% of height improvement occurs in the first 1000 days of a child's life and 30% occurs at 2-5 years of age.

The incidence of stunting in Indonesia as developing countries often linked to poverty and low human resources due to substandard education and health services. However, the incidence of stunting now not only happen to children in middle to low income families but also in well group families. Parent thinks that the short condition is a normal condition, it comes from heredity (genetic) from both parents or family line. In fact, heredity is the smallest determinant factor of health compared to other factors such as behavioral factors, environmental factors, economic, social, cultural and political perspective as well as factors from health service providers (Depkes RI, 2018).

In addition, the growth patterns of children around the world are similar to those mothers in good nutrition and good health during preconception and pregnancy. Other factors that affect a child's height in the first 1000 days or two years of life are maternal nutritional status, feeding, hygiene and sanitation, frequency of infection, and access to health services (Martorell, 2012). Inadequate breastfeeding and complementary feeding, recurrent infections, and micronutrient deficiencies are the initial determining factors in stunting. In addition, in terms of environmental factors such as education and health access, political stability, urbanization, population density, and social support networks affect linear growth disorders in children (Villar et al, 2014).

It is known that 78 of 94 children under five year live in one house with more than 3 family members. It can be nuclear family or extended family. The number of family members refers to person who live in a household. It consists of the wife, husband, children, grandparents, siblings, or other people who live in one house (BKKBN, 2011). Based on study by Fikadu et al (2014) in Southern Ethiopia, a higher number of family members has a higher risk of stunting. Family size determines the nutritional status of each person in the family, but nutritional status is also determined by other factors such as family support in providing nutritious food and the socioeconomic level of the family (Soetjiningsih, 2012). The large number of members is also closely related to poverty which is related to high morbidity and mortality rates due to limited costs in obtaining various health facilities (Kozier, 2010).

The number of family members has a significant relationship with the incidence of stunting where one additional person leads 0.7% increasing in the incidence of stunting (Umar, 2019). Purwanto (2018) found the significant relationship between the number of family and the level of family welfare. The large number of family will cause larger problems in a family if it is not balanced with appropriate income. Beside the economic factors, the parenting style given to children who live in the same house with a larger number of family members is also an important problem. This is related to the increasing number of adults who participate in providing care for children.

Parenting refers to the ability of family to give attention and support to their child to meet the physical, psychological and social needs. This parenting style is influenced by internal factors and external factors. Internal factors include age of parents, education and level of knowledge, attitudes and concepts of the role of mothers in the family. External factors come from environment, traditions and also socio-economics (Soetjiningsih, 2012).

Due to the problem of low economic productivity, other impacts on economic perspective for stunting sufferers are 8-46% get lower income and 66% have lower wealth than normal children. It is also known that 36% short stature children in the African continent and 27% in Asia have a big impact in terms of

socioeconomic consequences. The results of researches on short stature have varied results between countries, as this is related to socio-economic factors where short stature is an indicator in 80 countries to determine inequality in development in those countries (Prendergast, 2014).

CONCLUSION

In conclusion, the number of family member in a household is the most important risk factor of stunting. It is hoped that government and community health workers can find the proper intervention to decrease the prevalence of stunting

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